

REMARKS

Claims 16, 26, 33, 34, 44 and 46-50 are pending in this application. By this Amendment, claim 16 is amended, claim 1 is canceled, and claim 51 is added. Claim 15 is amended to correct an informality. Reconsideration based on the above amendments and following remarks is respectfully requested.

I. The Claims Define Allowable Subject Matter

A. Claim Rejections - 35 U.S.C. §102

1. Claims 1, 16 and 26

The Office Action rejects claims 1, 16 and 26 under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 6,157,474 to Orr et al. (Orr). This rejection is respectfully traversed.

It is respectfully submitted that the rejection of claim 1 is moot in light of the cancellation of claim 1.

Regarding claim 16, the Office Action asserts that Orr teaches that the image forming means and the light deflecting means are combined to deflect the light coming from the two-dimensional image forming means, and that both means are controlled so that images formation and deflection are in synchronous with the real time image from the two-dimensional image forming means. The Office Action cites, col. 3, lines 4-7.

It is respectfully submitted that Orr fails to disclose or teach all of the features recited in claim 16. Specifically, Orr does not disclose or teach the claimed deflecting means by which the projecting direction of the two-dimensional image formed by the two-dimensional image forming means changes in accordance with time-dependent changes of the two-dimensional image, as recited in claim 16.

Instead, Orr discloses that, the light ray 21 is always deflected to the zone 51 by the section 31 of the holographic optical element 3 and the light ray 2r is always deflected to the zone 5r by the section 3r of the holographic optical element 3 (see Fig. 2). Accordingly, in Orr, the projecting direction of the two-dimensional image formed by the holographic optical element 3 does not change. In contrast, each of the deflecting means of claims 16 and 26 changes the projecting direction.

It is respectfully submitted that since claim 26 depends from claim 16, that claim 26 is allowable at least for the reasons stated regarding claim 16. Withdrawal of the rejection of claims 16 and 26 is respectfully requested.

2. Claims 44 and 46

The Office Action rejects claims 44 and 46 under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 5,954,414 to Tsao (Tsao). This rejection is respectfully traversed.

The Office Action asserts that Tsao teaches a three-dimensional image display created by modulating two-dimensional images onto a display screen. The plurality of two-dimensional images is projected in directions different from each other thus creating a three-dimensional image. The Office Action cites col. 3, lines 30-39 and col. 4, lines 24-26.

It is respectfully submitted that Tsao fails to disclose or teach all the features recited in claim 44. Specifically, Tsao fails to disclose or teach the claimed two-dimensional image forming means for forming a plurality of two-dimensional images by scanning light which has been subjected to time-modulation based on information on a plurality of two-dimensional images, as recited in claim 44.

Tsao discloses a plurality of two-dimensional images is generated by the image generating panel, and is projected onto the moving screen (col. 4, lines 16-21).

In contrast, the two-dimensional image forming means of claims 44 and 46, scans light which has been subjected to time-modulation for forming the plurality of two-dimensional images. This feature of the present invention is described at pages 145-146 of the specification as follows:

for example, a laser beam moves from the left end to the right end of one region of the deflecting screen 401. In the same period, the laser beam slightly moves also downward. Therefore, the focus of the laser beam is at a slight angle to the horizontal direction. When the laser beam reaches the right end of the region of the deflecting screen 401, it returns to the left end and then moves to the right end again.

Since Tsao projects the two-dimensional images onto the moving screen, Tsao cannot adopt the two-dimensional image forming means of claim 44, because the screen moves during the period of light scanning, the two-dimensional image cannot be displayed.

It is respectfully submitted that since claim 46 depends from claim 44, claim 46 is allowable at least for the reasons stated regarding claim 44. Withdrawal of the rejection of claims 44 and 46 is respectfully requested.

B. Claim Rejections - 35 U.S.C. §103

1. Claims 33 and 34

The Office Action rejects claims 33 and 34 under 35 U.S.C. §103(a) as being unpatentable over Orr in view of U.S. Patent No. 6,421,174 to Ooshima et al. (Ooshima). This rejection is respectfully traversed.

The Office Action asserts that Orr teaches "a display device that similar to the one being claimed." However, the Office Action admits that Orr does not explicitly teach "the use of a curved cylindrical surface to form the image on." The Office Action asserts that Ooshima makes up for this deficiency. Specifically, the Office Action states that Ooshima does teach the use of a cylindrical light modulator screen. The Office Action cites Figs. 5a and 5b.

It is respectfully submitted that the cited combination of Orr and Ooshima fails to disclose or suggest all of the features recited in claims 33 and 34. Specifically, Ooshima fails to make up for the deficiencies of Orr as stated above regarding claim 16. Ooshima merely discloses a directional reflection screen and displaces them.

Withdrawal of the rejection of claims 33 and 34 is respectfully requested.

2. Claims 47-50

The Office Action rejects claims 47-50 under 35 U.S.C. §103(a) as being unpatentable over Ooshima. This rejection is respectfully traversed.

The Office Action states that Ooshima discloses "the imaging system has an image delivery mechanism that synchronizes the image and projection timing with rotating of the screen to accurately display the image." The Office Action cites col. 2, line 33 – col. 3, line 10. However, the Office Action admits that Ooshima does not explicitly state the requirement of recording image position and synchronization data. The Office Action further asserts, "however such a limitation is obvious to one skilled in the art." Specifically, the Office Action asserts that a computer could be added to the Ooshima invention to help regulate the image projection and image synchronization data.

It is respectfully submitted that Ooshima fails to disclose or suggest all of the features recited in claims 47 and 48. Specifically, since claims 47 and 48 depend from claim 44, these claims are allowable at least for the reasons stated regarding claim 44. In addition, each of

the two-dimensional image forming means of claims 47 and 48 scans light which has been subjected to time-modulation for forming the plurality of two-dimensional images.

It is respectfully submitted that Ooshima does not disclose or suggest all of the features recited in claim 49. Specifically, Ooshima does not disclose or suggest the three-dimensional image forming means that has a region in which position information used for controlling the positions of incidence of the light emitted by the two-dimensional image forming means, is recorded.

Ooshima merely discloses "it is desirable that the pitch of the triangularly-shaped mirror sheet 10 be an integer times the repetition length of the horizontal pixel 51 of a projected image", as shown in Fig. 12(b), (col. 7, line 51 – col. 8, line 9). In Ooshima, the projected position of the two-dimensional images by the mirror sheet 10 does not influence a reflective image. Thus, in Ooshima, it is not necessary to control the position of the two-dimensional images. Moreover, Ooshima does not disclose or suggest to make any information hold by the three-dimensional image forming means.

It is respectfully submitted that since claim 50 depends from claim 49, that claim 50 is allowable at least for the reasons stated regarding claim 49. Withdrawal of the rejection of claims 47-50 is respectfully requested.

C. New Claim

It is respectfully submitted that new claim 51 is not anticipated or rendered obvious by the prior art of record. Specifically, since claim 51 depends from claim 44, this claim is allowable at least for the reasons stated regarding claim 44.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 16, 26, 33, 34, 44 and 46-51 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Amendment Transmittal

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